

Marijuana in Medicine:

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CANNABIS INDICA, CANNABIS sativa, Cannabis americanus, Indian hemp and marijuana (or marihuana) all refer to the same plant. Cannabis is used throughout the world for diverse purposes and has a long history characterized by usefulness, euphoria or evil—depending on one's point of view. To the agriculturist cannabis is a fiber crop; to the physician of a century ago it was a valuable medicine; to the physician of today it is an enigma; to the user, a euphoriant; to the police, a menace; to the traffickers, a source of profitable danger; to the convict or parolee and his family, a source of sorrow.

This paper is concerned primarily with the medicinal aspects of cannabis.

Cannabis in Medicine Before 1800

The Chinese emperor Shen-nung is reported to have taught his people to grow hemp for fiber in the twenty-eighth century B.C. A text from the period 1500-1200 B.C. documents a knowledge of the plant in China—but not for use as fiber. In 200 A.D., the use of cannabis as an analgesic was described by the physician Hoa-tho.⁴⁴

In India the use of hemp preparations as a remedy was described before 1000 B.C. In Persia, cannabis was known several centuries before Christ. In Assyria, about 650 B.C., its intoxicating properties were noted.⁴⁴

Except for Herodotus' report that the Scythians used the smoke from burning hemp seeds for intoxication, the ancient Greeks seemed to be unaware of the psychoactive properties of cannabis. Dioscorides in the first century A.D. rendered an accurate morphologic description of the plant, but made no note of intoxicating properties.¹⁰

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In the thirteenth and fourteenth centuries, Arabic writers described the social use of cannabis and resultant cruel but unsuccessful attempts to suppress its non-medical use.⁴⁴

Although Galen described the use of the seeds for creating warmth, he did not describe the intoxicating qualities of hemp. Of interest is the paucity of references to hemp's intoxicating properties in the lay and medical literature of Europe before the 1800's.⁴⁴

Cannabis in Nineteenth-Century Medicine

The therapeutic use of cannabis was introduced into Western medicine in 1839, in a 40-page article by W. B. O'Shaughnessy, a 30-year-old physician serving with the British in India.²⁷ His discussion of the history of the use of cannabis products in the East reveals an awareness that these drugs had not only been used in medicine for therapeutic purposes, but had also been used for recreational and religious purposes.

O'Shaughnessy is not primarily known for his discovery of hemp drugs, but rather for his basic studies on intravenous electrolyte therapy in 1831, and his introduction of the telegraph into India in the 1850's.²⁶

After studying the literature on cannabis and conferring with contemporary Hindu and Moham-medan wise men, O'Shaughnessy tested the effects of various hemp preparations on animals, before attempting to use them to treat humans. Satisfied that the drug was reasonably safe, he administered preparations of cannabis extract to patients, and discovered that it had analgesic and sedative properties. O'Shaughnessy successfully relieved the pain of rheumatism and stilled the convulsions of an infant with this strange new drug. His most spectacular success came, however, when he quelled the wrenching muscle spasms of tetanus and rabies

Past, Present and Future

■ *Medicine in the Western World has forgotten almost all it once knew about therapeutic properties of marijuana, or cannabis.*

Analgesia, anticonvulsant action, appetite stimulation, ataraxia, antibiotic properties and low toxicity were described throughout medical literature, beginning in 1839, when O'Shaughnessy introduced cannabis into the Western pharmacopoeia.

As these findings were reported throughout Western medicine, cannabis attained wide use. Cannabis therapy was described in most pharmacopoeial texts as a treatment for a variety of disease conditions.

During the second half of the 1800's and in the present century, medical researchers in some measure corroborated the early reports of the therapeutic potential of cannabis. In addition, much laboratory research has been concerned with bioassay, determination of the mode of action, and attempts to solve the problems of insolubility in water and variability of strength among different cannabis specimens.

"Recreational" smoking of cannabis in the twentieth century and the resultant restrictive federal legislation have functionally ended all medical uses of marijuana.

In light of such assets as minimal toxicity, no buildup of tolerance, no physical dependence, and minimal autonomic disturbance, immediate major clinical reinvestigation of cannabis preparations is indicated in the management of pain, chronic neurologic diseases, convulsive disorders, migraine headache, anorexia, mental illness, and bacterial infections.

with the fragrant resin. Psychic effects resembling a curious delirium, when an overdose was given, were treated with strong purgatives, emetics with a blister to the nape of the neck, and leeches on the temples.²⁷

The use of cannabis derivatives for medicinal purposes spread rapidly throughout Western medicine, as is evidenced in the report of the Committee on Cannabis Indica of the Ohio State Medical Society, published in 1860. In that report physicians told of success in treating stomach pain, childbirth psychosis, chronic cough, and gonorrhea with hemp products.²⁵ A Dr. Fronmueller, of

Fuerth, Ohio, summarized his experiences with the drug as follows:

I have used hemp many hundred times to relieve local pains of an inflammatory as well as neuralgic nature, and judging from these experiments, I have to assign to the Indian hemp a place among the so-called hypnotic medicines next to opium; its effects are less intense, and the secretions are not so much suppressed by it. Digestion is not disturbed; the appetite rather increased; sickness of the stomach seldom induced; congestion never. Hemp may consequently be employed in inflammatory conditions. It disturbs the expectoration far less than opium; the nervous

system is also not so much affected. The whole effect of hemp being less violent, and producing a more natural sleep, without interfering with the actions of the internal organs, it is certainly often preferable to opium, although it is not equal to that drug in strength and reliability. An alternating course of opium and Indian hemp seems particularly adapted to those cases where opium alone fails in producing the desired effect.²⁵

Because cannabis did not lead to physical dependence, it was found to be superior to the opiates for a number of therapeutic purposes. Birch, in 1889, reported success in treating opiate and chloral addiction with cannabis,⁵ and Mattison in 1891 recommended its use to the young physician, comparing it favorably with the opiates:

With a wish for speedy effect, it is so easy to use that modern mischief-maker, hypodermic morphia, that they [young physicians] are prone to forget remote results of incautious opiate giving.

Would that the wisdom which has come to their professional fathers through, it may be, a hapless experience, might serve them to steer clear of narcotic shoals on which many a patient has gone awreck.

Indian hemp is not here lauded as a specific. It will, at times, fail. So do other drugs. But the many cases in which it acts well, entitle it to a large and lasting confidence.

My experience warrants this statement: cannabis indica is, often, a safe and successful anodyne and hypnotic.²³

In their study of the medical applications of cannabis, physicians of the nineteenth century repeatedly encountered a number of difficulties. Recognizing the therapeutic potential of the drug, many experimenters sought ways of overcoming these drawbacks to its use in medicine, in particular the following:

Cannabis products are insoluble in water.

The onset of the effects of medicinal preparations of cannabis takes an hour or so; its action is therefore slower than that of many other drugs.

Different batches of cannabis derivatives vary greatly in strength; moreover, the common procedure for standardization of cannabis samples, by administration to test animals, is subject to error owing to variability of reactions among the animals.

There is wide variation among humans in their individual responses to cannabis.

Despite these problems regarding the uncertainty of potency and dosage and the difficulties in mode

of administration, cannabis has several important advantages over other substances used as analgesics, sedatives, and hypnotics:

The prolonged use of cannabis does not lead to the development of physical dependence.^{11,13,14,24,39,44}

There is minimal development of tolerance to cannabis products.^{*11,13,14,24,44}

Cannabis products have exceedingly low toxicity.^{9,21,22,24} (The oral dose required to kill a mouse has been found to be about 40,000 times the dose required to produce typical symptoms of intoxication in man.)²¹

Cannabis produces no disturbance of vegetative functioning, whereas the opiates inhibit the gastrointestinal tract, the flow of bile and the cough reflex.^{1,2,24,44,46}

Besides investigating the physical effects of medicinal preparations of cannabis, nineteenth-century physicians observed the psychic effects of the drug in its therapeutic applications.^{4,27,33} They found that cannabis first mildly stimulates, and then sedates the higher centers of the brain. Hare suggested in 1887 a possible mechanism of cannabis' analgesic properties:

During the time that this remarkable drug is relieving pain a very curious psychological condition manifests itself; namely, that the diminution of the pain seems to be due to its fading away in the distance, so that the pain becomes less and less, just as the pain in a delicate ear would grow less and less as a beaten drum was carried farther and farther out of the range of hearing.

This condition is probably associated with the other well-known symptom produced by the drug; namely, the prolongation of time.¹⁶

Reynolds, in 1890,³³ summed up 30 years of his clinical experience using cannabis, finding it useful as a nocturnal sedative in senile insomnia, and valuable in treating dysmenorrhea, neuralgias including tic douloureux and tabetic symptoms, migraine headache and certain epileptoid or choreoid muscle spasms. He felt it to be of uncertain benefit in asthma, alcoholic delirium and depressions. Reynolds thought cannabis to be of no value in joint pains that were aggravated by motion and in cases of true chronic epilepsy.

Reynolds stressed the necessity of titrating the dose of each patient, increasing gradually every third or fourth day, to avoid "toxic" effects:

*Loewe notes a slight "beginner's habituation" in dogs, during the first few trials with the drug, as the only noticeable tolerance effect.²⁰

The dose should be given in minimum quantity, repeated in not less than four or six hours, and gradually increased by one drop every third or fourth day, until either relief is obtained, or the drug is proved, in such case, to be useless. With these precautions I have never met with any toxic effects, and have rarely failed to find, after a comparatively short time, either the value or the uselessness of the drug.³³

Concerning migraine headache, Osler stated in his text¹¹: Cannabis indica is probably the most satisfactory remedy.^{11,28}

Cannabis in Twentieth-Century Medicine

In his definitive survey of the literature and report of his own studies, deceptively titled *Marihuana, America's New Drug Problem*, Walton notes that cannabis was widely used during the latter half of the nineteenth century, and particularly before new drugs were developed:

This popularity of the hemp drugs can be attributed partly to the fact that they were introduced before the synthetic hypnotics and analgesics. Chloral hydrate was not introduced until 1869 and was followed in the next 30 years by paraldehyde, sulfonal and the barbitals. Antipyrine and acetanilide, the first of their particular group of analgesics, were introduced about 1884. For general sedative and analgesic purposes, the only drugs commonly used at this time were the morphine derivatives and their disadvantages were very well known. In fact, the most attractive feature of the hemp narcotics was probably the fact that they did not exhibit certain of the notorious disadvantages of the opiates. The hemp narcotics do not constipate at all, they more often increase than decrease appetite, they do not particularly depress the respiratory center even in large doses, they rarely or never cause pruritus or cutaneous eruptions and, most important, the liability of developing addiction is very much less than with opiates.⁴⁴

The use of cannabis in American medicine was seriously affected by the increased use of opiates in the latter half of the nineteenth century. With the introduction of the hypodermic syringe into American medicine from England in 1856 by Barker and Rupperer, the use of the faster acting, water-soluble opiate drugs rapidly increased. The Civil War helped to spread the use of opiates in this country; the injected drugs were administered widely—and often indiscriminately—to relieve the pain of maimed soldiers returning from combat. (Opiate addiction was once called the “army

disease”.)⁴¹ As the use of injected opiates increased, cannabis declined in popularity.

Cannabis preparations were still widely available in legend and over-the-counter forms in the 1930's. Crump* in 1931 mentioned the proprietaries “Piso's Cure,” “One Day Cough Cure” and “Neurosine” as containing cannabis.⁴⁴ In 1937 Sasman listed 28 pharmaceuticals containing cannabis.³⁶ Cannabis was still recognized as a medicinal agent in that year, when the committee on legislative activities of the American Medical Association concluded as follows:

. . . there is positively no evidence to indicate the abuse of cannabis as a medicinal agent or to show that its medicinal use is leading to the development of cannabis addiction. Cannabis at the present time is slightly used for medicinal purposes, but it would seem worthwhile to maintain its status as a medicinal agent for such purposes as it now has. There is a possibility that a re-study of the drug by modern means may show other advantages to be derived from its medicinal use.³²

Meanwhile, in Mexico, the poor were smoking marijuana to relax and to endure heat and fatigue. (Originally *Marijuana* was the Mexican slang word for the smoking preparation of dried leaves and flowering tops of the *Cannabis sativa* plant—the indigenous variety of the hemp plant.)

The recreational smoking of marijuana may have started in this country in New Orleans in about 1910, and continued on a small scale there until 1926, when a newspaper ran a six-part series on the use of the drug.⁴⁴ The fad subsequently spread up the Mississippi and throughout the United States, faster than local and state laws could be passed to discourage it. The use of “tea” or “muggles” blossomed into a minor “psychedelic revolution” of the 1930's. Narcotics officers encouraged the enactment of local prohibitory laws and eventually succeeded in bringing about restrictive Federal legislation. In 1937 Congress passed the Marihuana Tax Act, the finale to a series of prohibitory acts in the individual states. Under the new laws, the already dwindling use of cannabis as a therapeutic substance in medicine was brought to a virtual halt. In 1941, cannabis was dropped from the *National Formulary and Pharmacopoeia*.

Around the time of the passage of the Marihuana Tax Act, Walton postulated sites of action for cannabis drugs. Cortical areas, he found, are

*Chairman, Investigating Committee, American Medical Association.

affected at low dosage, while at high dosage there seems to be a depressant effect on the thalamo-cortical pathways. Hyperemia of the brain appears to be a local phenomenon, unless centers controlling vasodilation might be located in the thalamo-cortical region. Similar possible mechanisms are suggested for the phenomenon of mild hypoglycemia, usual hunger and thirst and occasional lacrimation and nausea.⁴⁴

Despite restrictive legislation, a few medical researchers have had the opportunity to continue the investigation of the therapeutic applications of cannabis in recent years. In his study of the medical applications of cannabis for Mayor LaGuardia's committee, Dr. Samuel Allentuck reported, among other findings, favorable results in treating withdrawal of opiate addicts with tetrahydrocannabinol (THC), a powerful purified product of the hemp plant.^{1,24}

An article in 1949, buried in a journal of chemical abstracts, reported that a substance related to THC controlled epileptic seizures in a group of children more effectively than diphenylhydantoin (Dilantin®), a most commonly prescribed anti-convulsant.⁹

A number of experimenters, believing that cannabis products might be of value in psychiatry, have investigated the applications of various forms of them in the treatment of mental disorders. Cannabis had been used in the nineteenth century to treat mental illness.^{19,25,45,46} However, aside from some rather equivocal clinical studies, primarily in the treatment of depression,^{29,30,35,39} and another report of success in treating withdrawal from alcohol and opiate addiction,⁴² no significant contemporary psychiatric studies involving cannabis therapy have been reported to date.

The Current Status of Cannabis Research

Many current "authoritative" publications unequivocally state that there is no legitimate medical use for marijuana. As compared with the 1800's, this century has seen very little medical research on the array of some 20 chemicals that are found in the hemp plant.³⁷

Today's readers may tend to be skeptical about a report of a cure for gonorrhea published over a century ago.^{19,25} Such findings may bear reinvestigation, however, in the light of a report from Czechoslovakia in 1960 that cannabidiolic acid, a product of the unripe hemp plant, has bacteriocidal properties.⁷ Some of the therapeutic applications

reported in the early medical papers have been corroborated by later investigators, but for the most part the therapeutic aspects of cannabis remain to be re-explored under modern clinical conditions.

In the past 20 years, clinical and basic research on cannabis have dwindled to practically nothing. The record of tax stamps issued by the Federal Bureau of Narcotics for cannabis research, as compared with those for research on narcotic drugs, tells the story of the 20-year "drought" in the investigation of cannabis products:⁴³

| Year | Users for Purposes of Research, Instruction, or Analysis | |
|------|--|-----------|
| | Narcotic Drugs | Marijuana |
| 1938 | | 5 |
| 1941 | 94 | |
| 1943 | | 43 |
| 1946 | 323 | |
| 1948 | | 87 |
| 1951 | 1078 | |
| 1953 | | 18 |
| 1956 | 284 | |
| 1958 | | 6 |
| 1961 | 344 | |
| 1965 | 431 | 16 |

Eleven studies funded by the National Institute of Mental Health in 1967 concerning cannabis were either specialized animal experiments, part of an observational sociologic study of a number of drugs, or explorations of chemical detection methods.

The Future of Cannabis and Medicine

Unless existing restrictive state and Federal laws governing marijuana are changed, there will be no future for either modern scientific investigation or controlled clinical trial by present-day methods.

A concerted effort is indicated for full-scale investigations where knowledge is lacking. Acute and chronic effects of cannabis should be restudied by modern methods. Metabolic pathways of action and detoxification need exploration by the pharmaceutical means of today. Chronic toxicity studies must be undertaken to examine possible long-term effects of cannabis use.*

Medical science must again confront the problems of cannabis' insolubility in water and its variable strength. Since human and animal responses vary a great deal, individual doses must be titrated. The popular "double blind" type of study methods

*Cunningham in 1893 found no gross central nervous system changes with chronic administration of hemp drugs to primates over several months.⁸

will require revision. The reporting of personal drug experience was once acceptable to the scientific community.^{15,22,25,29,34,39,44} Humans who are drug "sophisticates" will again become indispensable to psychoactive drug research, as wine tasters are to the wine industry, for only humans can verbally report the subtle and complex effects of these substances.

Government agencies having stimulated little significant clinical research in this field, the pharmaceutical industry should take the initiative in starting basic research and clinical studies into the purified congeners of cannabis for their chemical properties, pharmacologic qualities and therapeutic applications.

Possible Therapeutic Applications of . . . Tetrahydrocannabinols and Like Products

- Analgesic-hypnotic^{16,18,19,23,25,27,33,45}
- Appetite stimulant^{18,25,27}
- Antiepileptic-antispasmodic^{9,18,27,33,40,45}
- Prophylactic and treatment of the neuralgias, including migraine and tic douloureux^{3,16,17,18,19,23,25,28,31,33,38,40,45}
- Antidepressant-tranquillizer^{6,16,18,19,23,25,31,33,40,45}
- Anti-asthmatic^{18,25,45}
- Oxytoxic^{25,45}
- Antitussive^{3,16,25,38,45}
- Topical anesthetic⁸
- Withdrawal agent for opiate and alcohol addiction^{5,23,24,38,42,45}
- Childbirth analgesic¹²
- Antibiotic⁷

Discussion

Medicine, being an empiric art, has not hesitated in the past to utilize a substance first used for recreational purposes,* in the pursuit of the more noble purposes of healing, relieving pain and teaching us more of the workings of the human mind and body. The active constituents of cannabis appear to have remarkably low acute and chronic toxicity factors and might be quite useful in the management of many chronic disease conditions. More reasonable laws and regulations controlling psychoactive drug research are required to permit significant medical inquiry to begin so that we can fill the large gaps in our knowledge of cannabis.

*Morton "discovered" ether for anesthetic purposes after observing medical students at "ether frolics" in 1846. (Howard W. Haggard: Devils, Drugs and Doctors, Harper and Row, New York, 1929, p. 99.)

GENERIC AND TRADE NAME OF DRUG

Diphenylhydantoin—*Dilantin*®

REFERENCES

1. Adams, Roger: Marihuana, Bulletin of the New York Academy of Medicine, 18:705-29, Nov. 1942.
2. Ames, Frances: A clinical and metabolic study of acute intoxication with cannabis sativa and its role in the model psychoses, J. of Mental Science, 104:972-99, Oct. 1958.
3. Anderson, G. S. D.: Remarks on the remedial virtues of cannabis indica, or Indian hemp, Boston Med. and Surg. J., 67:427-30, 1863.
4. Bell, John: On the haschich or cannabis indica, Boston Med. and Surg. J., 56:209-16, 229-36, 1857.
5. Birch, Edward A.: The use of Indian hemp in the treatment of chronic chloral and chronic opium poisoning, Lancet, 1:625, 30 Mar. 1889.
6. Boyd, E. S., and Merritt, D. A.: Effects of a tetrahydrocannabinol derivative on some motor systems in the cat, Arch. Internat. de Pharmacodynamie et de Therapie, 153:1-12, 1965.
7. CIBA Foundation Study Group, Hashish—Its Chemistry and Pharmacology, 1964, pp. 45, 49.
8. Cunningham, D. D.: Report by Brigade-Surgeon-Lieut. Col. D. D. Cunningham, F.R.S., C.I.E., on the nature of the effects accompanying the continued treatment of animals with hemp drugs and with dhatura; From Report of the Indian Hemp Drugs Commission, 1893-4. Government Central Printing Office, Simla, India, 1894, Vol. 3, pp. 192-96.
9. Davis, J. P., and Ramsey, H. H.: Antiepileptic action of marihuana-active substances, Federat. Proc., 8:284-85, Mar. 1949.
10. Dioscorides, Pedanius: The Greek Herbal of Dioscorides, Edited by Robert T. Gunther, Hafner Publishing Co., New York, 1959, pp. 390-91.
11. Eddy, N. B., Halbach, H., Isbell, H., and SeEVERS, M. H.: Drug dependence: its significance and characteristics. Psychopharmacology Bull., 3:1-12, July 1966.
12. Effects of alcohol and cannabis during labor, JAMA, 94:1165, 1930.
13. Goodman, L. S., and Gilman, A.: The Pharmacological Basis of Therapeutics, 2nd Edition, Macmillan, New York, 1955.
14. Goodman, L. S., and Gilman, A.: The Pharmacological Basis of Therapeutics, 3d Edition, Macmillan, New York, 1965.
15. Hamilton, H. C., Lescohier, A. W., and Perkins, R. A.: The physiological activity of cannabis sativa. Comparison of extracts from Indian and American-grown drug upon human subjects, J. Amer. Pharm. Assoc., 2:22-30, 1913.
16. Hare, Hobart Amory: Clinical and physiological notes on the action of cannabis indica, Therap. Gaz., 11:225-28, 1887.
17. Hare, H. A., and Chrystie, W.: A System of Practical Therapeutics, Lee Brothers and Co., Philadelphia, 1892, Vol. 3.
18. Indian Materia Medica, edited by A. K. Nadkarni, Popular Book Depot, Bombay, 1954.
19. Lilly's Hand Book of Pharmacy and Therapeutics, Eli Lilly and Co., Indianapolis, 1898, p. 32.
20. Loewe, S.: The active principles of cannabis and the pharmacology of the cannabinoids, Archiv fur Experim. Pathologie und Pharmacologie, 211:175-93, 1950.
21. Loewe, S.: Studies on the pharmacology and acute toxicity of compounds with marihuana activity, J. Pharmacol. and Experim. Therap., 88:154-61, Oct. 1946.
22. Marshall, C. R.: A contribution to the pharmacology of cannabis indica, JAMA, 31:882-91, 15 Oct. 1898.
23. Mattison, J. B.: Cannabis indica as an anodyne and hypnotic, St. Louis Med. and Surg. J., 61:265-71, Nov. 1891.
24. Mayor's Committee on Marihuana, The Marihuana Problem in the City of New York, Jaques Cattell, Lancaster, Pa., 1944.
25. McMeens, R. R.: Report of the committee on cannabis indica; From Transactions of the Fifteenth Annual Meeting of the Ohio State Medical Society, Follett, Foster and Co., Columbus, Ohio, 1860, pp. 75-100.
26. Moon, John B.: Sir William Brooke O'Shaughnessy—the foundations of fluid therapy and the Indian telegraph service, New Eng. J. of Med., 276:283-84, 2 Feb. 1967.
27. O'Shaughnessy, W. B.: On the preparations of the Indian hemp, or gunjah, Trans. Med. and Phy. Soc., Bengal, 71-102, 1838-40; 421-61, 1842.
28. Osler, W., and McCrae, T.: Principles and practice of Medicine, 8th Edition, D. Appleton and Co., New York, 1916, p. 1089.
29. Parker, C. S., and Wrigley, F.: Synthetic cannabis preparations in psychiatry: (1) synhexyl, J. of Mental Science, 96:176-79, 1950.
30. Pond, D. A.: Psychological effects in depressive patients of the marihuana homologue synhexyl, J. Neurol. Neurosurg. Psychiat., 11:271-79, 1948.

31. Ratnam, E. V.: Cannabis indica, J. of the Ceylon Branch of the Brit. Med. Assoc., 13:30-34, 1916.
32. Report of the Committee on Legislative Activities, JAMA, 108:2214-15, 1937.
33. Reynolds, J. Russell: Therapeutical uses and toxic effects of cannabis indica, Lancet, 1:637-38, 22 Mar. 1890.
34. Robinson, Victor: An Essay on Hasheesh—Historical and Experimental, L. H. Ringer, New York, 1912.
35. Rolls, E. J., and Stafford-Clark, D.: Depersonalization treated by cannabis indica and psychotherapy, Guy's Hospital Report, 103:330-36, 1954.
36. Sasman, Marty: Cannabis indica in pharmaceuticals, J. of the N.J. Med Soc., 35:51-52, Jan. 1938.
37. Shulgin, Arthur T.: Personal communication, 1968.
38. Stevens, A. A.: Modern Materia Medica and Therapeutics, W. B. Saunders and Co., Philadelphia, 1903, pp. 77-78.
39. Stockings, G. Tayleur: A new euphoriant for depressive mental states, Brit. Med J., 1:918-22, 28 June 1947.
40. Suckling, C. W.: On the therapeutic value of Indian Hemp, Brit. Med. J., 2:12, 1881.
41. Terry, C. E., and Pellens, M.: The Opium Problem, Bureau of Social Hygiene, Inc., New York, 1928, pp. 53-93.
42. Thompson, L. J., and Proctor, R. C.: The use of pyrahexyl in the treatment of alcoholic and drug withdrawal conditions, N. Carolina Med. J., 14:520-23, Oct. 1953.
43. U.S. Treasury Dept., Bureau of Narcotics, Traffic in Opium and Other Dangerous Drugs for the Year Ended Dec. 31, 1965, U.S. Printing Office, Washington, 1966, pp. 55-56.
44. Walton, Robert P.: Marihuana: America's New Drug Problem, J. B. Lippincott, Philadelphia, 1938, pp. 1-18, 86-157.
45. Waring, Edward John: Practical Therapeutics, Lindsay and Blakiston, Philadelphia, 1874, pp. 157-61.
46. Wood, G. B., and Bache, F.: The Dispensatory of the United States of America, 12th Edition, J. B. Lippincott, Philadelphia, 1866, pp. 379-82.

A MURMUR IN THE NECK

On a routine physical examination, you discover a patient has a murmur in his neck, but no symptoms of vascular obstruction. What should you do?

"It has been my advice to take the murmur as evidence that the patient may have atherosclerotic disease which could at some time affect his cerebral circulation. I would put the man in my practice population, look after him fairly regularly, and instruct him about possible future symptoms.

"If I picked up this sign in the hospital when the patient came in for a major operation, I would feel justified in at least studying him arteriographically because of the low mortality risk with arteriograms. If he has a great deal of obstruction, and especially if I can squeeze out of him some past symptoms, I feel justified in doing a prophylactic operation prior to the one for which he was admitted.

"The other position you could take, and I wouldn't argue too strongly against, is that you do the arteriograms and be aware of what he has. In the event that he does have a stroke during or after surgery, you'll know where the lesion is; and if you get with it, chances are quite good he still would have a favorable response. But in general my approach to the asymptomatic obstruction is conservative."

—E. STANLEY CRAWFORD, M.D., Houston
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